

Notice of Allowability	Application No.	Applicant(s)	
	10/613,559	GILL, HARDAYAL SINGH	
	Examiner	Art Unit	
	Tianjie Chen	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Pre-Appeal Brief filed on 01/30/2007.
2. ☒ The allowed claim(s) is/are 1-11 and 13-34.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|---|--|


TIANJIE CHEN
PRIMARY EXAMINER

DETAILED ACTION

1. Applicant's request in Pre-Appeal Brief filed on 01/30/2007 for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Dominic M. Kotab on 04/06/2007.

The application has been amended as follows:

- Claim 12 has been cancelled.

Reasons for Allowance

3. The following is an examiner's statement of reasons for allowance:

- With regard to independent claim 1, as the closest reference of record, Parkin (US 6,153,320) discloses a magnetic head, comprising: a free layer; an antiferromagnetic layer spaced apart from the free layer; an antiparallel (AP) pinned layer structure positioned between the free layer and the antiferromagnetic layer and having a net magnetic moment equal to about zero; wherein the AP pinned layer structure includes antiparallel pinned

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layers and an AP coupling layer, wherein the antiparallel pinned layers have about identical thicknesses as measured in a direction perpendicular to planes of deposition thereof; wherein the antiferromagnetic layer provides a coercivity that enhances pinning of the AP pinned layer structure, wherein a thickness of the AP coupling layer and thicknesses of the pinned layers are selected to provide: a pinned layer saturation field of at least 5 KOe; **but fails to show** an in-stack bias layer for stabilizing the free layer, wherein the free layer is positioned between the bias layer and the AP pinned layer structure, wherein the bias layer is not adjacent an antiferromagnetic layer.

- With regard to independent claim 9, as the closest reference of record, Parkin (US 6,153,320) discloses a magnetic head, comprising: a free layer; an antiferromagnetic layer spaced apart from the free layer; an antiparallel (AP) pinned layer structure positioned between the free layer and the antiferromagnetic layer and having a net magnetic moment substantially equal to zero; and wherein the AP pinned layer structure includes antiparallel pinned layers; wherein the antiferromagnetic layer provides a coercivity that enhances pinning of the AP pinned layer structure; wherein the AP pinned layer structure includes at least two pinned layers having magnetic moments that are self-pinned antiparallel to each other, the pinned layers being separated by an AP coupling layer; wherein a thickness of the AP coupling layer and thicknesses of the pinned layers are selected to provide a pinned layer saturation field of at least 5 KOe, wherein the antiparallel pinned layers have about identical thicknesses as measured in a direction

perpendicular to planes of deposition thereof; **but fails to show** that antiparallel pinned layers are pinned through large magnetic anisotropy due to positive magnetostriction and small net moment for the antiparallel pinned layers.

- With regard to independent claim 18, as the closest reference of record, Parkin (US 6,153,320) discloses a magnetic head: comprising: a free layer; an antiferromagnetic layer spaced apart from the free layer, the antiferromagnetic layer being constructed of PtMn having a thickness of between about 50 Å and 100 Å; an antiparallel (AP) pinned layer structure positioned between the free layer and the antiferromagnetic layer, wherein the AP pinned layer structure includes at least two pinned layers having magnetic moments that are self-pinned antiparallel to each other, the pinned layers being separated by an AP coupling layer; wherein the antiferromagnetic layer provides a coercivity, that enhances pinning of the AP pinned layer structure, wherein a thickness of the AP coupling layer and thicknesses of the pinned layers are selected to provide a pinned layer saturation field of at least 5 KOe, wherein the antiparallel pinned layers have about identical thicknesses as measured in a direction perpendicular to planes of deposition thereof such that a net magnetic moment of the AP pinned layer structure is substantially equal to zero; **but fails to show** an in-stack bias layer, the bias layer stabilizing the free layer, that the AP pinned layer structure stabilizing the in-stack bias layer.

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- Applicant asserts; in a conventional magnetic head, as the magnetic orientations of the pinned layers become flip-flopped, the damage is permanent and the head must be repaired (i.e., reset) or discarded. This invention is to provide is a way to stabilize the pinned layers, preventing their magnetic orientations from flip-flopping (Specification, p. 10).


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


TIANJIE CHEN
PRIMARY EXAMINER